



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 893,669	06/29/2001	Gunhee Jang	P20978	9360

7055 7590 05/21/2003

GREENBLUM & BERNSTEIN, P.L.C.
1950 ROLAND CLARKE PLACE
RESTON, VA 20191

EXAMINER

ELKASSABGI, HEBA

ART UNIT	PAPER NUMBER
----------	--------------

2834

DATE MAILED: 05/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/893,669

Applicant(s)

JANG ET AL.

Examiner

Heba Elkassabgi

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04/21/03.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

The proposed drawing correction of Figure #5 filed on 04/21/03 has been accepted by the examiner to be entered. However, a formal drawing correction is required in reply to the Office action. The correction to the drawings will not be held in abeyance.

Claim Objections

Claim 11 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim, or amend the claim to place the claim in proper dependent form, or rewrite the claims in independent form.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1,3,4,5,6,7,and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakuragi et al. U.S. Patent 5598047 and further in view of Dunfield et

al. U.S. Patent 5694268 and Takemura et al. U.S. Patent 5880545 and Aimiya U.S. Patent 5416655 and Lee et al. U.S. Patent 60710144.

Sakuragi et al. discloses in Figure 15 a disk (36) mounted on an upper face of the outer protruding portion (FF) of the hub (12) and a fixed shaft (stationary shaft)(1) formed unitarily with the housing (EE) at a central portion of the housing (EE) and extending inwardly (DD) into the housing (EE), with a clamp (37) fixed to the upper side the hub (2) by a bolt (clammer screws)(39) to mount the disk (36) to the hub (2). Including a lower ball bearing (8) and an upper ball bearing (7) is ring-shaped and composed on an inner race (NN) and (SS), an outer race (NNA) (SSA) and a plurality of balls. However, Sakuragi does not disclose a base plate, a housing positioned in a central circular hole, a cylindrical hub, and a thrust pad.

Dunfield et al. discloses in Figure 6 an inner protruding portion (AA) fixed between the lower ball bearing (162) and upper ball bearing (160) with a permanent magnet (166) bonded to a lower side (HH) of an outer circumferential face of the outer protruding portion (BB) of the hub (154). The cylindrical hub (154) having an inner protruding portion (AA) from a central portion of an inner circumferential face of the hub (154). In addition to a stator (200) comprising a tooth-slot structured iron core (206a-206l) and a winding (208a-208l) wound around the iron core. Furthermore, Dunfield et al. discloses that a disk drive spindle motor for rotating at least one disc.

Takemura et al. illustrates in Figure 19 a stator (JJ) bonded to an upper end (GG) of an inner circumferential face of the circular hole; a lower ball bearing (51) bonded to lower side of an outer circumferential face of the fixed shaft (205), an upper ball bearing

(242) spaced by a certain interval from the lower bearing (251) and bonded to an upper side of the outer circumferential face of the fixed shaft (205).

Aimiya discloses in Figure 1 a housing (11) that is positioned in the circular hole of the base plate (5) with an outer protruding portion (MM) protruding from an upper side of the outer circumferential face of the hub (15). As well as a cover (6) fixed to the base plate (5) and spaced apart by an interval from an upper side of the clamp (16) and that the hub with the yoke provide a closed magnetic path. Additionally, Aimiya indicates a single disc that is rotated by a spindle motor.

Lee illustrates in Figure 6 a disk-spindle motor having a base plate (124b) having a circular hole at a central portion and a cylindrical hub (128b) with both ends open in which the cylindrical hub (128b) is configured to provide a gap (QQ) between the shaft and the clamp (137a).

It would have been obvious at the time of the invention was made to a person having ordinary skill in the art to modify Sakuragi et al. invention by placing a base plate having a housing with a fixed shaft in the upper central portion of the housing, a stator bonded to the upper portion of the inner circumferential face of the circular hole; a lower and upper ball bearing fixed to the outer circumferential face of the fixed shaft; an outer protruding portion along the an upper side of the outer circumferential face of the hub, in order to reduce a high frequency electromagnetic noise to the magnetic disk, and provide a simple structure that does not take up much space in resulting in a smaller and highly productive spindle motor.

Claim 2,8,9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunfield et al. U.S. Patent 5694268 and in further view of Sakuragi et al. U.S. Patent 5598047 and Takemura et al. U.S. Patent 5880545 and Aimiya U.S. Patent 5416655 and Lee et al. U.S. Patent 6071014.

Dunfield et al. discloses in Figure 6 a cylindrical hub (154) having an outer protruding portion protruding from an upper side of an outer circumferential face of the hub (154) and an inner protruding portion (KK) protruding from a lower side of an inner circumferential face of the hub (154) with a permanent magnet (66) bonded to a lower side (HH) of an outer circumferential face of the outer protruding portion (BB) of the hub (154). In addition, figure 8 illustrates the stator (200) comprises of a tooth-slot structured iron core (206a-206l) and a winding (208a-208l) wound around the iron core. Furthermore, Dunfield et al. discloses that a disk drive spindle motor for rotating at least one disc.

Sakuragi et al. discloses in Figure 15 a fixed cylindrical shaft (stationary shaft)(1) that is formed unitarily with the housing (EE) at a central portion of the housing and extending inwardly (DD) into the housing and having a jaw portion at a central portion of an outer circumferential face of the fixed shaft (1). A clamp (37) that is fixed to the hub (2) by a bolt (clamping screws)(39) to mount the disk (36) to the hub (2). In addition, a disk (36) mounted on the outer protruding portion (FF) of the hub (12).

Takemura et al. illustrates in Figure 19 a stator (JJ) bonded to an upper end portion (GG) of an inner circumferential face of the circular hole of the base plate (201).

Aimiya discloses in Figure 1 a disk –spindle motor having a base plate (124b0) having a circular hole at a central portion of the base plate (300) a housing fixedly positioned in the circular hole of the base plate (5). A cover (6) is fixed to the base plate (5) and spaced apart by an interval from an upper side of the clamp (16) and that the hub with the yoke provides a closed magnetic path. . Additionally, Aimiya indicates a single disc that is rotated by a spindle motor.

Lee illustrates in Figure 6 a cylindrical hub (128b) spaced by a certain interval from the thrust pad (142b) that is vertically provided at the fixed shaft (122b) and mounted on the jaw portion (LL) of the fixed shaft (122b) and the thrust pad (142b) is ring –shaped. In addition a cylindrical hub (128b) with both ends open, wherein the cylindrical hub (128b) is configured to provide a gap (QQ) between the shaft (122b) and the clamp (137a).

It would have been obvious at the time of the invention was made to a person having ordinary skill in the art to modify Dunfield et al.'s invention by having a spindle motor having a base plate with a central hole to which a housing is fixedly inserted into the circular hole of the base plate with the fixed shaft formed with the housing and a jaw portion of the shaft located at a central portion of the shaft and a stator that is bonded to the inner circumferential face of the base plate, furthermore a hub having an outer and inner protruding portion of the hub at an outer and inner circumferential face of the hub. With a thrust pad spaced by a certain interval from the fixed shaft. Moreover, a permanent magnet that is located at a lower side of the outer circumferential face of the outer protruding portion of the hub, a disk mounted on to the outer protruding portion

and a clamp fixed to the hub with a bolt; for the purpose of reducing the high frequency electromagnetic noise to the magnetic disk, providing a simple structure that does not take up much space in resulting in a smaller and highly productive spindle motor, dampening the vibration of the stator structure to reduce the generated acoustic noise in the storage device, and to design a magnetic disk apparatus wherein spaces near the cover are effectively utilized.

Response to Arguments

Applicant's arguments with respect to claims Independent Claim 1 and 2 have been considered but are not persuasive.

In response to Applicant's argument that "a disk" means a single disk or one disk, applicant misinterprets the principle that claims are interpreted in the light of the specification. Although this element is found as an embodiment in the specification, it was claimed explicitly. Nor were the words, "a disk", that is used in the claims defined in the specification to require these limitations. A reading of the specification provides no evidence to indicate that this limitation must be imported into the claims to give meaning to disputed terms. Additionally, Applicant's limitation on which the Applicant relies on that "a single disk", is not stated in the claims. It is the claims that define the claimed invention, and it is claims, not specification that are anticipated or unpatentable.

Constant v. Advanced Micro-Devices Inc., 7 USPQ2d 1064.

In response to Applicants argument that neither Sakuragi et al. or Dunfield et al. teach or suggest or teach applicants invention of making the disk assembly thinner because they teach a plurality of disks is disagreed by the examiner Dunfield does teach that the spindle motor can be for "one or more disks", which teaches that the spindle motor can be designed for one disk if desired. Additionally Applicants' argument that neither the primary references or the references of Takemura, Aimiya, or Lee that suggest or teach for a smaller disk drive is respectfully disagreed by the examiner. The prior art of Sakuragi et al., which state in column #1 paragraph #3 lines 22 -29, disclose that there is a demand for thinner, miniaturized disk drives in which small magnetic disk drive is foreseen, though Sakurgai et al. does not explicitly teach a disk drive as small as 3.3 mm it does however teach that there is an understanding by one of ordinary skill in the art to design a smaller disk drive. It would have been an obvious matter of design choice for a modification in size. In which a change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237.

In response to Applicants argument that the Examiner has combined an excessive number of references, it has been held that the number of references does not have a bearing on the propriety of the rejection; theoretically such could be infinite. Ex parte Fine, 1927 C.D. 84.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Heba Elkassabgi whose telephone number is (703) 305-2723. The examiner can normally be reached on M-Th (6:30-3:30), and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Heba Elkassabgi
May 19, 2003

